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Date: July 19, 2006

DECLARATION

The undersigned, Karin T. Dunn, hereby states that she is well acquainted with both the English and German languages and that the attached is a true translation to the best of her knowledge and ability of the German text of PCT/EP2005/050359, filed on 1/28/2005 and published on 8/11/2005 under No. WO 2005/072965 A1, and of a set of amended claims.

The undersigned further declares that the above statement is true; and further, that this statement was made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any patent resulting therefrom.

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10/587293
IAP6 Rec'd PCT/PTO 25 JUL 2006

Specification

Devices for adjusting contact pressure exerted on an adjacent rotational body by a roller in a roller strip and/or for engaging said roller on the rotational body and/or for disengaging said roller from the rotational body

The invention relates to devices that are used to adjust contact pressure exerted on an adjacent rotational body by a roller in a roller strip and/or to engage said roller on the rotational body and/or to disengage said roller from the rotational body, according to the preamble to claim 1, 6 or 22.

From DE 102 44 043 A1, devices used to adjust rollers in a printing machine are known, wherein each end of a roller that exerts contact pressure on an adjacent rotational body is seated in a support bearing having a roller mount that is capable of radial travel, with each support bearing being equipped with multiple actuators that act on said roller and can be pressurized with a pressure medium. A roller that can be displaced in this manner is also engaged, for example, against a forme cylinder.

From DE 38 25 517 A1 a device for engaging and disengaging and for adjusting inking unit and dampening unit rollers in a printing machine is known, wherein a stored-program controller automatically regulates the positioning of an inking or dampening roller relative to a fixed distribution roller by means of an input, preset adjustment pressure. The stored-program controller issues a positioning command to an electrically activated actuator, and the actuator, which is designed as a direct current motor, transmits the positioning command to the positioning element, wherein said positioning element is responsible for mechanically adjusting the inking roller or dampening roller. The electrically activated actuator and the positioning element are arranged in a roller lock of the adjustable inking or

dampening unit roller. With the device known from DE 38 25 517 A1, a remote adjustment of the inking or dampening rollers is possible. Beginning with an initial position for the adjustable inking or dampening rollers, for different production types adjustment values for other positions can be stored in the stored-program controller. Thus the adjustment values for the inking or dampening rollers are based upon the selected production type, with pre-set adjustment values for the different positions being determined based upon specific production types by the stored-program controller by means of a program.

From WO 03/049946 A2 and the subsequently published WO 2004/028810 A1, methods for operating an inking unit or dampening unit of a printing machine are known, wherein in the inking unit or dampening unit at least three rollers or cylinders are provided, which can be placed against one another forming at least two adjacent roller strips, and wherein at least one of the rollers is seated in a machine frame such that it can be displaced relative to the other rollers. The displaceably seated roller is pressed into the gap between the adjacent rollers with a degree of force that is adjustable in terms of its magnitude and its direction, in order to allow the variable adjustment of the respective contact pressure in the two roller strips.

The object of the invention is to create devices for adjusting contact pressure exerted on an adjacent rotational body by a roller in a roller strip and/or for engaging said roller on the rotational body and/or for disengaging said roller from the rotational body, wherein the width of the roller strip formed between the roller and its adjacent rotational body can be adjusted as needed, even when the printing couple is running in production.

The object is attained according to the invention with devices having the characterizing features

of claim1, 6 or 22.

The benefits that can be achieved with the invention consist especially in that the contact pressure exerted on an adjacent rotational body by a roller in a roller strip can be individually adjusted as needed by means of a control unit, especially by addressing individual actuators that play a part in the adjustment, and in that an existing setting can be changed preferably remotely, for example even when the printing couple is running in production. Because the contact pressure is adjustable, the width of the roller strip formed between the roller and its adjacent rotational body can be adjusted as needed, which produces a beneficial effect on the quality of the printed product that is produced with the printing machine. The adjustment of the contact pressure is preferably accomplished by means of a support bearing, also called a roller lock, that is equipped with at least one actuator, wherein in each roller lock that plays a part in the adjustment of a roller preferably multiple identifiable actuators are arranged, which are individually selectable and therefore can be individually actuated directly or indirectly by the control unit, wherein each of the activated actuators exerts a radial force directed toward the interior of its roller lock, wherein the vector sum of radial forces, preferably exerted by multiple actuators, form the contact pressure exerted by the roller on the adjacent rotational body, wherein the radial forces exerted by the actuators can preferably be adjusted separately and independently of one another, and are also set by the control unit for a desired operating position. The actuators, like the respective roller strips and the roller locks allocated to them, can each be clearly identified by means of an identification code. Actuators connected to a common pressure source can be activated in groups, but are preferably activated individually. Based upon the arrangement of controllable devices and their respective connections, for example via conduits for transporting pressure medium, the actuators of a specific roller lock, which are connected to different pressure sources, can, for example, be activated together, while actuators of another roller lock that are connected to the same pressure sources

remain inactive. Especially in the case of a forme cylinder that is not completely covered with printing formes in an axial direction, the contact pressure exerted by a roller engaged against this forme cylinder can be set differently at the two axial ends of this roller. When the control unit receives the instruction, for example by means of a corresponding input via a control element that is a part of the control unit, to change the setting of the contact pressure in a selected roller strip, the control unit calculates the amount of pressure that should be applied to which actuator in the affected roller lock, and implements whatever adjustment may be necessary in the pressure setting, for example by actuating one or more controllable devices in order to adjust the pressure in selected actuators. To implement the contact pressure whose value is to be adjusted, the control unit controls valves, which are preferably arranged in the pressure conduits, especially rapid-reaction, electrically or electromagnetically actuatable proportional valves, so that an adjustment of a contact pressure value can be implemented within a few seconds.

Exemplary embodiments of the invention are represented in the drawings and will be described in greater detail below.

The drawings show:

Fig 1, in a cross-section, a printing couple comprising an inking unit and a dampening unit, each with rollers that are adjustable in terms of their contact pressure;

Fig. 2, in a cross-section, a printing couple comprising an inking unit and a dampening unit, each with rollers that are adjustable in terms of their contact pressure, wherein in the inking unit two rollers that are adjustable in terms of their contact pressure are engaged against one another;

Fig. 3, a longitudinal section of a roller lock;

Fig. 4 a perspective view of the roller lock of Fig. 3, with a partial longitudinal section in two orthogonal perpendicular planes;

Fig. 5, a schematic representation radial forces exerted by actuators on a adjustable roller without a displacement of the adjustable roller;

Fig. 6, a schematic representation radial forces exerted by actuators on a adjustable roller with a displacement of the adjustable roller;

Fig. 7, a pneumatic layout for activating actuators and fixation devices that are components of a printing couple.

Fig. 1 shows, in a schematic, simplified, cross-sectional representation, a printing couple 01 comprising an inking unit 02 and a dampening unit 03, each with rollers 04; 06; 07; 08; 09; 11 that are adjustable in terms of their contact pressure. The rollers 04; 06; 07; 08; 09; 11 that are adjustable in terms of their contact pressure are seated such that they can be displaced. In this illustrated example, each of these adjustable rollers 04; 06; 07; 08; 09; 11 is in direct contact with two adjacent rotational bodies 12; 13; 14; 16; 17, in other words each of these rollers 04; 06; 07; 08; 09; 11 is simultaneously engaged on two of the rotational bodies 12; 13; 14; 16; 17 provided in this arrangement, so that each of these rollers 04; 06; 07; 08; 09; 11 has on its circumferential surface two roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, also called nip-points N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, which extend essentially axially relative to the respective roller 04; 06; 07; 08; 09; 11. Each roller that is adjustable in terms of its contact pressure 04; 06; 07; 08; 09; 11 presses in its respective roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 with an adjustable level of contact pressure against its adjacent rotational bodies 12; 13; 14; 16; 17.

The roller 04 is designed, for example, as a dampening forme roller 04, and forms its first nip-point N11 with a rotational body 12, which is designed, for example, as a cylinder 12, especially as a forme cylinder 12, and forms its second nip-point N12 with a rotational body 13, which is designed, for example, as a dampening distribution roller 13. The roller 06 is designed, for example, as an ink forme roller 06, and forms its first nip-point N21 with the forme cylinder 12 and its second nip-point N22 with a rotational body 16 designed, for example, as an ink transfer roller 16. The roller 07 is also designed, for example, as an ink forme roller 07 and forms its first nip-point N31 with the forme cylinder 12 and its second nip-point N32 with the ink transfer roller 16. In the dampening unit 03, for example a further roller 08 that is adjustable in terms of its contact pressure is provided, for example an intermediate roller 08, which forms its first nip-point N41 with the dampening distribution roller 13 and its second nip-point N42 with another dampening unit roller 14. In the inking unit 02, for example two additional rollers 09 and 11 that are adjustable in terms of their contact pressure are provided, for example two intermediate rollers 09 and 11, wherein the roller 09 forms its first nip-point N51 with the ink transfer roller 16 and its second nip-point N52 with another inking unit roller 17, and the roller 11 forms its first nip-point N61 with the ink transfer roller 16 and its second nip-point N62 with the other inking unit roller 17.

The printing couple 01 also illustrated schematically in cross-section in Fig. 2 and comprising an inking unit 02 and a dampening unit 03, each with rollers 04; 06; 07; 08; 09; 11 that are adjustable in terms of their contact pressure, differs from the printing couple 01 shown in Fig. 1 in the positioning of the roller 11 in the inking unit 02. In the printing couple 01 shown in Fig. 2, the roller 11 is not in direct contact with the ink transfer roller 16 at its first nip-point N61, rather the roller 11 is engaged against the roller 09, so that the roller 09 forms its second nip-point N52 not with the additional inking unit roller 17, but with the roller 11. Thus in this example the nip-points N52; N61 designate the same roller strips N52; N61.

In the arrangements shown in Fig. 1 and 2, the adjustable rollers 04; 06; 07; 08; 09; 11 each have two nip-points N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62. However, in the printing couple 01 an operational position for at least one of these adjustable rollers 04; 06; 07; 08; 09; 11 can also be provided, in which said roller 04; 06; 07; 08; 09; 11 is in direct contact with only one adjacent rotational body 12; 13; 14; 16; 17, and is disengaged from its second adjacent rotational body 12; 13; 14; 16; 17. A further operational position for at least one of the adjustable rollers 04; 06; 07; 08; 09; 11 can provide that said adjustable roller 04; 06; 07; 08; 09; 11 is disengaged from all of its adjacent rotational bodies 12; 13; 14; 16; 17, while each of the remaining adjustable rollers 04; 06; 07; 08; 09; 11 in this printing couple 01 is in direct contact with at least one adjacent rotational body 12; 13; 14; 16; 17. It is also possible for only one adjacent rotational body 12; 13; 14; 16; 17 to be provided for at least one of the adjustable rollers 04; 06; 07; 08; 09; 11 in the printing couple 01.

The printing couple 01 is arranged in a printing machine that produces a printed product, wherein the printing machine is designed, for example, as a newspaper printing press and is equipped, for example, with multiple printing couples 01, each with at least one inking unit 02 and/or one dampening unit 03. The printing couple 01 operates, for example, in a planographic printing process, preferably in an offset printing process, wherein a transfer cylinder that is part of the printing couple 01 and an impression cylinder that operates in conjunction with the transfer cylinder are not represented in Fig. 1 and 2. The dampening unit 03 is omitted when the printing couple 01 is to be used in a dry offset printing process.

The circumferential surface of the rotational body 12; 13; 14; 16; 17 designed, for example, as a forme cylinder 12, is covered with at least one printing forme (not shown). Preferably multiple printing formes, especially four or six printing formes, are arranged in an axial direction on the forme cylinder 12. In the circumferential direction of each forme cylinder 12,

for example, two printing formes are arranged in tandem, so that a total of up to eight or twelve printing formes can be arranged on the circumferential surface of the same forme cylinder 12. The printing couple 01 can have a total of significantly more, but also fewer adjustable rollers 04; 06; 07; 08; 09; 11 in its inking unit 02 and its dampening unit 03 than are shown by way of example in Fig. 1 and 2.

In the area of direct contact between rollers 04; 06; 07; 08; 09; 11 and rotational bodies 12; 13; 14; 16; 17 engaged on one another, a flattened area is formed on the cylindrical, circumferential surface of the roller 04; 06; 07; 08; 09; 11, of the rotational body 12; 13; 14; 16; 17, or of both, with the chord of the flattened area corresponding to the width of the roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 that extends on the circumference of the roller 04; 06; 07; 08; 09; 11 or of the rotational body 12; 13; 14; 16; 17. The flattening of the otherwise cylindrical circumferential surface of the roller 04; 06; 07; 08; 09; 11 or of the rotational body 12; 13; 14; 16; 17 is possible because the roller 04; 06; 07; 08; 09; 11 or its adjacent rotational body 12; 13; 14; 16; 17 or both have an elastically deformable circumferential surface. For example, the rollers 04; 06; 07; 08; 09; 11 have a rubberized circumferential surface.

In practice, in order to achieve a high quality of the printed product to be produced using the printing couple 01, it is necessary to set the roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 present in the printing couple 01 to a specific width, with said width lying within the range of a few millimeters and amounting, for example, to between 1 mm and 10 mm. The rollers 04; 06; 07; 08; 09; 11 that can be adjusted in terms of their contact pressure and their adjacent rotational bodies 12; 13; 14; 16; 17 have a diameter of, for example, 100 mm to 340 mm and an axial length, for example, of between 1,000 mm and 2,400 mm. The width of the roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 corresponds to the contact pressure exerted by the respective adjustable roller 04; 06; 07; 08; 09; 11 on its adjacent rotational body 12; 13; 14; 16; 17 in the respective roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62.

Each roller 04; 06; 07; 08; 09; 11 that can be adjusted in terms of its contact pressure is seated at least at one of its ends 18, but preferably at both of its ends 18, in a support bearing 21 having a roller mount 39 that is capable of radial travel, in other words in a so-called roller lock 21, wherein each support bearing 21 or roller lock 21 has at least one and preferably multiple actuators 22 that act upon said roller 04; 06; 07; 08; 09; 11, wherein the actuators 22, in turn, are preferably arranged in a housing that is a component of the support bearing 21 or roller lock 21, and can each be pressurized, for example, with a pressure medium. In what follows, although the actuators 22 are described as actuators 22 that can be pressurized with a pressure medium, which corresponds to their preferred embodiment, the hereinafter described control of the support bearings 21 and/or their actuators 22 is independent of the medium that is used to exert the contact pressure. To implement the proposed control, the actuators 22 can also be designed, for example, as actuators 22 that exert the respective contact pressure, for example, on the basis of hydraulic, electric, motor-driven or piezoelectric action. In any case, activated actuators 22 cause the roller mount 39 to move eccentrically relative to the support bearing 21, within a plane that extends orthogonally to the axial direction of the adjustable roller 04; 06; 07; 08; 09; 11. In this, the radial travel can occur in a linear or non-linear path of motion.

The permissible radial travel of the roller mount 39 in the roller support bearing 21, which is, for example, stationary, thus causes an eccentric displacement of the roller mount 39 in the support bearing 21, which is preferably designed as a radial bearing. In Fig. 3 and 4 a roller lock 21 is represented by way of example. Fig. 3 shows the roller lock 21 in a longitudinal section that runs parallel to the axis 19 of the roller 04; 06; 07; 08; 09; 11. Fig. 4 shows the roller lock 21 of Fig. 3 from a perspective view with a partial longitudinal section in two orthogonal, perpendicular planes. It can be provided that at least each roller 04; 06; 07 that operates directly in conjunction with a forme cylinder 12

has at least one actuator 22, which is controlled independently of the other actuators 22 of the rollers 04; 06; 07 that operate directly in conjunction with the forme cylinder 12. Preferably it is provided that at least three rollers 04; 06; 07 that operate directly in conjunction with the forme cylinder 12 are provided, and that each of these rollers 04; 06; 07 has at least one independently controlled actuator 22.

The housing of the roller lock 21 has a sleeve-shaped frame holder 23, inside which a roller holder 24 is seated, wherein the actuators 22, when activated, act upon the roller holder 24 and can displace the roller holder 24 radially in a gap that is formed radially around the axis 19, between the frame holder 23 and the roller holder 24. The width of the gap between the frame holder 23 and the roller holder 24 measures, for example, from 1 mm to 10 mm, preferably approximately 2 mm. The actuators 22 are arranged, for example, in the gap between the frame holder 23 and the roller holder 24, or in a chamber or recess in the frame holder 23, with the actuator 22 that is arranged in the chamber or recess in the frame holder 23 having an active surface 38 that faces the roller holder 24, with which the actuator 22 exerts surface pressure on the roller holder 24 when said actuator is in its operational state, in which it is pressurized by a pressure medium.

The actuators 22 are preferably arranged in the housing of the roller lock 21 so as to be non-rotatable relative to this housing or at least relative to the frame holder 23. Each of the actuators 22 is designed, for example, as a tubular component, such as a pressure hose, that can be pressurized with a pressure medium, wherein the tubular component has at least one surface 38 (Fig. 4) made of a reversibly deformable elastomeric material, with said surface 38 being designed in a further embodiment that is not shown here as a membrane, wherein when the tubular component is pressurized with the pressure medium said membrane 38 preferably comes to rest against an outer circumferential surface of the roller holder 24. The reversibly deformable surface 38 thus conforms at least

largely to the surface 38 that effectively exerts the surface pressure. In the embodiment preferred here the actuators 22 have no pistons guided in a cylinder and no piston rod. The integration of the actuators 22 into the housing of the roller lock 21 clearly results in an extremely compact construction of the roller lock 21. The pressure medium is supplied to each of the actuators 22 via a pressure conduit 41 (Fig. 4).

One of the ends 18 of the roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure is seated in the roller mount 39, which is, for example, semicircular and preferably designed as a quick-release coupling, and is rigidly connected to the roller holder 24, wherein each of the rollers 04; 06; 07; 08; 09; 11 that are adjustable in terms of their contact pressure is capable of rotating on its own axis 19. As an alternative to the rigid connection of the roller mount 39 to the end of the roller 04; 06; 07; 08; 09; 11, the roller mount 39 can have a bearing, such as a roller bearing or a plain bearing, in which the end of the roller 04; 06; 07; 08; 09; 11 is rotatably seated. The frame holder 23 is attached, for example, to a side frame 36 of the printing couple 01. The roller lock 21 is sealed against dust, moisture and other contaminants by means of a sealing element 37 that preferably covers especially the gap between the frame holder 23 and the roller holder 24, at the end surface of the roller lock that faces the roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure, wherein the sealing element 37 is attached to the frame holder 23, for example, via screws. With the sealing element 37, especially the actuators 22 are also protected against contamination and thus against any impairment of their mobility. The radial displacement of the roller holder 24 in the frame holder 23 also allows a roller 04; 06; 07; 08; 09; 11 to be engaged on its adjacent rotational body 12; 13; 14; 16; 17, or disengaged from it.

The roller lock 21 is equipped, for example, with a fixation device, which immobilizes the roller holder 24, and with it the roller 04; 06; 07; 08; 09; 11 that is rigidly connected thereto, in a first operational position, thereby locking it in place against any radial displacement relative to the

frame holder 23, or, in a second operational position, releases it for such displacement. The fixation device comprises, for example, a preferably coaxial first multi-plate assembly 26 that is rigidly connected, for example, to the roller holder 24, and an also preferably coaxial second multi-plate assembly 27, wherein the plates of the second multi-plate assembly 27 engage between the plates of the first multi-plate assembly 26. The immobilization is accomplished by the plates meshing with one another, preferably frictionally or positively. Once the frictional or positive contact of the plates has been released, the second multi-plate assembly 27 is capable of moving in the axial direction of the roller lock 21.

The axial movement of the second multi-plate assembly 27 is accomplished, for example, in that a pressure medium is supplied through a channel 28 that is formed in the side frame 36, into a pressure chamber 29 located in the roller lock 21, wherein a pressure plate 31 arranged in the pressure chamber 29 moves a plunger 33, which is preferably arranged in the roller holder 24, axially, against the force of a spring element 32. The second multi-plate assembly 27 is fastened to a plunger head 34 of the plunger 33, and is also moved with the axial movement of the plunger 33, causing the plates in the multi-plate assemblies 26; 27 to become disengaged. When the pressure exerted on the pressure plate 31 by the pressure medium in the pressure chamber 29 is switched off, the force exerted by the spring element 32 guides the plates of the multi-plate assemblies 26; 27 back into engagement with one another, thereby immobilizing the roller holder 24, which can be radially displaced relative to the frame holder 23 by the actuators 22 in the roller lock 21, in the frame holder 23.

In the example shown in Fig. 1 through 4, each roller lock 21 is equipped with four actuators 22, arranged in a circular pattern around the axis 19 of the roller 04; 06; 07; 08; 09; 11, wherein the actuators 22 are preferably distributed with equal spacing around the axis 19 of the roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure. The actuators 22 are remotely controllable, in other words they can be activated by means of a control unit, and are preferably designed as pneumatic actuators 22. A prestressed

gas, preferably compressed air, is used as the pressure medium, for example. Possible alternatives to the preferred pneumatic actuators 22 are especially hydraulic actuators 22 that are impinged upon by a fluid, or electromotive actuators 22. As is shown in Fig. 5 and 6 in a schematic representation, each actuator 22, when pressurized with a pressure medium, exerts a radial force Fn1; Fn2; Fn3; Fn4, directed toward the interior of its roller lock 21, on the roller 04; 06; 07; 08; 09; 11 that is connected to the roller lock 21 and is adjustable in terms of its contact pressure, wherein the actuators 22 are preferably radially supported against or in the frame holder 23 of the roller lock 21, and exert the radial force Fn1; Fn2; Fn3; Fn4 on the roller 04; 06; 07; 08; 09; 11, which is attached to the roller holder 24 and is adjustable in terms of its contact pressure, by exerting the surface pressure on the roller holder 24 that is arranged in the frame holder 23 such that it can be radially displaced. Accordingly, the pressure exerted by the pressure medium in the respective actuator 22 and the radial force Fn1; Fn2; Fn3; Fn4 of said actuator 22 correspond to one another. Radial forces Fn1; Fn2; Fn3; Fn4 exerted simultaneously by actuators 22 in the same roller lock 21 form an opening angle α with one another, which deviates from 0° and 180°, preferably lying between 45° and 135°, and is, for example, 90°. The contact pressure that is exerted on an adjacent rotational body 12; 13; 14; 16; 17 by a roller 04; 06; 07; 08; 09; 11, which is adjustable in terms of its contact pressure, in a roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 then results as a vector sum of the radial forces Fn1; Fn2; Fn3; Fn4 exerted simultaneously by the actuators 22 in one roller lock 21 - if applicable taking into account a force of weight that is at least partially exerted on the adjacent rotational body 12; 13; 14; 16; 17 by the adjustable roller 04; 06; 07; 08; 09; 11 on the basis of its own mass.

With an identifying element n in the radial force designator Fn1; Fn2; Fn3; Fn4 a specific roller lock 21 can be designated and therefore identified. Further discussion of the significance of the identifying element n will be addressed below. Preferably each roller lock 21 that is built into the printing machine and is a component of an adjustable roller

04; 06; 07; 08; 09; 11 is assigned an identification code that can be used in the control process as an address with which the roller lock 21 can be clearly identified in the printing machine or at least in a printing couple 01, and can thereby be selected in the control process. In the same manner, each actuator 22 that is a part of a roller lock 21 is assigned an identification code, with which each actuator 22 in one of the roller locks 21 that are arranged in the printing machine or in the respective printing couple 01 can be clearly identified, selected, and controlled. Furthermore, as with the above-described identification codes, the pressure chamber 29 that is part of the fixation device of each roller lock 21 is assigned an identification code, whereby ultimately each fixation device for the roller locks 21 that are arranged in the printing machine or in the printing couple 01 can be clearly identified. The respective identification code for the roller locks 21, their actuators 22 and their fixation device is preferably machine readable and can be stored in the control unit, preferably an electronic control unit that processes digital data.

In the example shown in Fig. 1 through 4, the identification code for the actuators 22 and the fixation device of each roller lock 21 consists of a series of numerals, with the first numeral designating the relevant roller lock 21 and the second numeral designating the relevant actuator 22 in the respective roller lock 21 or its fixation device. Thus each identification code nm, with an identifying element n; m for the roller lock 21, its actuators 22 and its fixation device, designates a clearly specified roller lock 21 in the printing couple 01, a clearly specified actuator 22 in the printing couple 01, and a clearly specified fixation device in the printing couple 01. In this, the identification code nm specifies a roller lock 21 with its first identifying element n, and a specific actuator 22 in this roller lock 21 or its fixation device with its second identifying element m. For example, the identification code "12" consisting, for example, of a two-digit number, designates with its first numeral the roller lock 21 identified by the number "1", which in the example shown in Fig. 1 through 4 is assigned to the dampening forme roller 04, while

the second numeral in the numeric sequence, which in this case was selected as the number "2", designates a very specific actuator 22 in the roller lock 21 identified by the number "1". The identification code "15" in this example designates the fixation device of the roller lock 21 that is designated by the number "1". In the example shown in Fig. 1 through 4, the identification code nm relates to numeric sequences comprised of a first identifying element n comprising a number between "1" and "6", because six roller locks 21 requiring differentiation are provided, and a second identifying element m comprising a number between "1" and "5" for the four actuators 22 per roller lock 21 and the allocated fixation device. Because each roller lock 21, each of its actuators 22, and each fixation device in the printing couple 01 is assigned an identification code nm, each roller lock 21, each actuator 22 and each fixation device can be clearly identified and addressed. The identification codes nm can each be stored, for example, in the control unit as an individual, unambiguous address, with which each roller lock 21, each actuator 22 and each fixation device can be identified, selected, addressed and controlled by the control unit, separately and independently of other roller locks 21, actuators 22 and fixation devices arranged in the printing couple 01.

When both ends 18 of the same roller 04; 06; 07; 08; 09; 11 that can be adjusted in terms of contact pressure and/or its position can be changed, and/or at least one end 18 of two different rollers 04; 06; 07; 08; 09; 11 that can each be adjusted in terms of contact pressure and/or their positions can be changed are each seated in a support bearing 21, in other words in a roller lock 21 having a roller mount 39 that is capable of radial travel, with each support bearing 21 having at least one actuator 22 that acts upon the roller 04; 06; 07; 08; 09; 11, the control unit controls at least the actuator 22 of at least two support bearings 21 separately and independently of other support bearings 21 and actuators 22. The control unit accordingly controls at least one actuator 22 in a support bearing 21 separately and independently of an actuator 22 in another support bearing 21. The control unit can also control groups of actuators 22 and support bearings 21 together,

especially if these jointly controlled actuators 22 and support bearings 21 form a functional system, in other words based upon their technical function in the printing process they must continuously and necessarily be positioned in a fixed arrangement relative to one another.

The at least two actuators 22 in each roller lock 21 are always arranged the same in their preferably circular distribution in each roller lock 21 with respect to a specific position of the roller lock 21, so that in all the roller locks 21 in a printing couple 01 the identifying element m for its actuators 22 and its fixation device can always be assigned in the same order. Accordingly, the same identifying element m is always assigned to actuators 22 occupying the same position in this sequence. For example, the actuators 22 and the fixation device are identified in ascending order, with the identification code for the fixation device being assigned the highest value in this order. The actuators 22 in each roller lock 21 are thereby designated in a fixed order. For example, starting from a specific position on the circumference of the roller lock 21, the actuators 22 in each roller lock 21 are designated in the same fixed order in the circumferential direction.

In each roller lock 21 the actuators 22, in their preferred pneumatic embodiment, are each connected via a pressure conduit 41 to a pressure source, such as a compressor, with a pressure level 42. As is apparent from the pneumatic layout shown in Fig. 7, it can be provided that actuators 22 arranged in different roller locks 21, which due to their identical arrangement in their respective roller lock 21 are assigned the same identifying element m, are connected in parallel via the same pressure conduit 41 to the same pressure source or at least at the same pressure level 42. Actuators 22 that are arranged in the same roller lock 21 but are assigned a different identifying element m are connected via different pressure conduits 41

to different pressure sources or at least at different pressure levels 42.

It can be provided that the actuators 22 arranged in the roller locks 21 are constantly pressurized, and that the incoming pressure acts to displace the adjustable roller 04; 06; 07; 08; 09; 11 and/or acts as a contact pressure exerted on the adjustable roller 04; 06; 07; 08; 09; 11 that is to be changed, only if and as long as the fixation device of the relevant roller lock 21 is released, in other words it is in the operating position that will permit the displacement of the adjustable roller 04; 06; 07; 08; 09; 11. If and as long as the fixation device of the relevant roller lock 21 is restricting the displacement of the adjustable roller 04; 06; 07; 08; 09; 11, pressure acting on at least one of the actuators 22 or a change in said incoming pressure will have no effect on the adjustable roller 04; 06; 07; 08; 09; 11. If and as long as no effect on the adjustable roller 04; 06; 07; 08; 09; 11 is intended, the pressure conduits 41 to the actuators 22 that operate in conjunction with this roller 04; 06; 07; 08; 09; 11, instead of being continuously pressurized, can also be set to be at least partially pressureless or at least substantially pressure-reduced.

Roller locks 21 that are connected to the same roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure preferably have the same number of actuators 22. As in the example described here, the roller locks 21 of multiple or even all the rollers 04; 06; 07; 08; 09; 11 that can be adjusted in terms of their contact pressure can have the same number of actuators 22. In a printing couple, a side frame 36, in or on which a first support point for the rollers 04; 06; 07; 08; 09; 11 that are adjustable in terms of contact pressure, along with their adjacent rotational bodies 12; 13; 14; 16; 17, is located, is customarily designated as "Side I", and the opposite side frame 36 with a second support point for the rollers 04; 06; 07; 08; 09; 11 that are adjustable in terms of their contact pressure, along with their adjacent rotational bodies 12;

13; 14; 16; 17, is customarily designated as "Side II".

In accordance with the prior art, actuators 22 in roller locks 21 that are connected to the same roller 04; 06; 07; 08; 09; 11 exert an equal level of contact pressure on the adjacent rotational body 12; 13; 14; 16; 17 at both ends 18 of said roller 04; 06; 07; 08; 09; 11 in the roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62. If, however, the rotational body 12, which is designed as a forme cylinder 12, is not evenly covered with printing formes in its axial direction, and instead the forme cylinder 12 is, for example, only half covered or at least is not continuously covered with printing formes, it is advantageous to set the contact pressure exerted on the forme cylinder 12 at the two ends 18 of the same roller 04; 06; 07; 08; 09; 11 at different levels. In this case the vector sum of the radial forces Fn1; Fn2; Fn3; Fn4 of the actuators 22 in the roller lock 21 on "Side I" will differ from the vector sum of the radial forces Fn1; Fn2; Fn3; Fn4 of the actuators 22 in the roller lock 21 on "Side II".

In the example shown in Fig. 7 of a pneumatic circuit for the actuators 22 in all roller locks 21 arranged in the printing couple 01, preferably electrically or electromagnetically activated, controllable devices arranged in the pressure conduit 41 that leads from the pressure source, said devices being preferably designed as rapid-reaction proportional valves EP1; EP2; or EP3; EP4, for example 3/3-way proportional valves EP1; EP2; EP3; EP4, determine the pressure level 42 that is present at the respective actuators, wherein, for example, one of the proportional valves EP1; EP2; EP3; EP4 is allocated to each roller lock 21, wherein the control unit activates actuators 22 arranged in the roller locks 21 via the proportional valves EP1; EP2; EP3; EP4. Two additional controllable devices that are provided in the circuit, which preferably are designed as electrically or electromagnetically actuatable valves EP5; EP6, for example as 5/2-way valves, and which are arranged in the pressure conduit 41 on the pathway of the pressure medium from its pressure source to the actuators 22 in a

series connection, downstream from one of the proportional valves EP1; EP2; EP3; EP4, allow the selection of whether actuators 22 on "Side I" of the roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure will be pressurized at the same pressure as "Side II" or at a different pressure. The pressure level 42 can be adjusted by means of the proportional valves EP1; EP2; EP3; EP4 to any level, for example between 0 bar and 10 bar, preferably between 0 bar and 6 bar.

The fixation devices for the roller locks 21 of the same roller 04; 06; 07; 08; 09; 11 are, for example, connected in parallel in their respective pressure conduit 41, and thus preferably change their operating position at the same time. With preferably also electrically or electromagnetically actuated valves V15; V25; V35; V45; V55; V65, for example 3/2-way valves V15; V25; V35; V45; V55; V65, each fixation device is placed either in a first operational position, in which the fixation device blocks the essentially radial displacement of the roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure, or in a second operational position, in which the fixation device permits the essentially radial displacement of the roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure.

As an alternative, or in addition to the circuit for the actuators 22 shown in Fig. 7, a controllable device can be allocated to each roller lock 21, wherein said controllable device applies pressure to multiple, preferably all, pressure conduits 41 for actuators 22 in the same roller lock 21 at the same time, with said conduits being connected to their respective pressure sources, at a first pressure level 42 in a first operational position and at a second pressure level 42 in a second operational position, wherein in both operational positions the pressure level 42 that exists at the actuators 22 in each case is different from zero for at least one of the actuators 22 in the same roller lock 21. All actuators 22 in one roller lock 21 are thereby pressurized at the same time at their respective pressure levels 42, which preferably differ from one another in the two operational positions of the controllable device.

In the two operational positions of the controllable device, the pressure level 42 that exists at multiple or all actuators 22 in one roller lock 21 is also completely different, so that each of the actuators 22 in one roller lock 21 is pressurized at a different pressure level 42. Actuators 22 designated by the same identifying element m in different roller locks 21 can have the same pressure level 42, while actuators 22 in the same roller lock 21 having different identifying elements m as a rule have different pressure levels 42. The switch between the first operational position and the second operational position is preferably made abruptly via a switching operation of the controllable device initiated by the control unit. Accordingly, the controllable device acts on pressure conduits 41 that lead to all actuators 22 in the same roller lock 21 in the same manner, and can comprise, for example, a flow-check valve having multiple passageways that are independent of one another, or multiple synchronously, in other words simultaneously, switched flow-check valves, or a switching position for the proportional valves EP1; EP2; EP3; EP4. Because the adjustment of all actuators that are involved in the switch is performed simultaneously, in other words synchronously, the adjustment of contact pressure that is exerted on an adjacent rotational body 12; 13; 14; 16; 17 by a roller 04; 06; 07; 08; 09; 11 in a roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 occurs rapidly, in other words within a very short period of time. In this manner, during an adjustment of the setting of the inking unit 02 or the dampening unit 03, especially when the printing couple is running in production, an unstable operating condition that tends toward vibrations is prevented. If multiple rollers 04; 06; 07; 08; 09; 11 each seated in roller locks 21 are provided, with each roller lock 21 having an identifying element n, the control unit selects the controllable device that is allocated to each roller lock 21 in each case based upon the identifying element n.

The printing couple 01 can have a standard configuration with respect to the contact pressure exerted by rollers 04; 06; 07; 08; 09; 11,

with said standard configuration comprising a set of values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62, wherein each value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 corresponds to a contact pressure exerted by a roller 04; 06; 07; 08; 09; 11 of this printing couple 01 in a roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 on a rotational body 12; 13; 14; 16; 17 that is adjacent to the respective roller 04; 06; 07; 08; 09; 11. The standard configuration can, for example, consist of numerical values, value pairs or value sequences listed in a table or graphic, wherein the control unit accesses these numerical values, value pairs or value sequences using a program designed for adjusting a desired contact pressure, which is run in the control unit, and uses these numerical values, value pairs or value sequences to adjust the desired contact pressure.

In the example shown in Fig. 1, 2 and 7 six rollers 04; 06; 07; 08; 09; 11 that are adjustable in terms of their contact pressure, with a total of twelve roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, are provided in the printing couple 01, wherein each roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure is seated in a roller lock 21 having four actuators 22. Taking into account the option of being able to set contact pressures of different values on "Side I" and "Side II" of the printing couple 01, the standard configuration for this printing couple 01 can comprise a set of twenty-four values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62. For each of these roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, the value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of the contact pressure being exerted therein is in each case formed from a vector sum of the radial forces Fn1; Fn2; Fn3; Fn4 exerted simultaneously by actuators 22 in the same roller lock 21, if applicable taking into account the force of weight exerted at least partially by the roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure on its adjacent

rotational body 12; 13; 14; 16; 17 based upon its own mass. Thus to each value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of one of the contact pressures five additional values comprised of the four radial forces Fn1; Fn2; Fn3; Fn4 and if applicable the mass of the adjustable roller 04; 06; 07; 08; 09; 11 are allocated. Furthermore, each value for a radial force Fn1; Fn2; Fn3; Fn4 can be subdivided to indicate its absolute value and its direction of action.

The values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of the contact pressures exerted in the roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, the values of the radial forces Fn1; Fn2; Fn3; Fn4 allocated to each of these, preferably subdivided into value and direction of action, and if applicable the mass of the adjustable roller 04; 06; 07; 08; 09; 11 are preferably stored in a memory device in the control unit. Also stored in the memory device of the control unit are preferably the value of the gravitational constants for calculating the force of weight from the mass of the adjustable roller 04; 06; 07; 08; 09; 11, and for each roller 04; 06; 07; 08; 09; 11 that is controllable in terms of its contact pressure a value for the distance from the center point of the roller 04; 06; 07; 08; 09; 11, which lies on its axis 19, to the center point of the respective adjacent rotational body 12; 13; 14; 16; 17 with which it is in direct contact, wherein each value for one of these distances can be subdivided to an indication of its absolute value and its spatial direction.

In the standard configuration, based upon the values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 for the contact pressures stored in the memory device of the control unit, in the direct contact between rollers 04; 06; 07; 08; 09; 11 that are adjustable in terms of their contact pressure and rotational bodies 12; 13; 14; 16; 17, the two being engaged on one another, a specific degree of flattening of the respective cylindrical

circumferential surface of the roller 04; 06; 07; 08; 09; 11, the rotational body 12; 13; 14; 16; 17, or both results, with the chord of the flattened area corresponding to the width of the roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 that extends along the circumference of the roller 04; 06; 07; 08; 09; 11 or the rotational body 12; 13; 14; 16; 17. The standard configuration generates a degree of flattening that corresponds to a specific target value for the width of each roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, in order to achieve a high quality of the printed product to be produced using the printing couple 01 under standard operating conditions.

In the case of operating conditions that deviate from the standard, because the diameter of one of the rollers 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure, or the diameter of one of the rotational bodies 12; 13; 14; 16; 17, is expanded, for example due to a substance containment, especially due to an absorption of moisture, or has decreased as a result of wear, it is necessary to correct the width of a roller strip or multiple roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 that has changed as a result of the change in diameter, until the width of each roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 again corresponds to its target value. Alternatively, operating conditions may require that the width of each roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 be adjusted to a new target value. In both cases, the contact pressure exerted in each relevant roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 must be adjusted to a new value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62, which will necessitate that values for the radial forces Fn1; Fn2; Fn3; Fn4 of the affected roller locks 21 be changed.

The control unit is equipped with at least one control element and, for example, one display device for displaying one or more values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 for the contact pressure exerted in a specific

roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62. The reference symbols for the roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, chosen here by way of example can also be used as identification codes for the roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, so that each roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 can be clearly identified by its identification code.

With the control element of the control unit, which is designed, for example, as a button, as a keypad, or as a pointer instrument, a specific roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 can be selected, for example, from a list of all roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 in a printing couple 01 that are provided with an identification code, or the identification code of a specific roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 can be input into the control unit via its control element. For each of these roller strips N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, at least for the standard configuration, a value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62, especially a target value, for the contact pressure exerted in the roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 is stored in the memory device of the control unit. During the selection or the input of the identification code for a specific roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 this value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 is displayed for example numerically, alphanumerically, in a diagram, or in a pictogram on the display device, which is capable of displaying alphanumeric or graphic symbols.

With the control element, the displayed value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 for the contact pressure exerted in the roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 is adjusted to a new

value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 for the contact pressure exerted in the roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, wherein the displayed value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 is adjusted, for example continuously or gradually, preferably in stages of 10 % of the displayed value, by the control element. Or the control element is used to select a specific factor from a list of available factors by which the displayed value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 should be adjusted.

For the new value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of the contact pressure exerted in the selected roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, the control unit calculates the correct values for the radial forces Fn1; Fn2; Fn3; Fn4 exerted in the relevant roller lock 21 and/or the new pressures to be set in the actuators 22, and stores the calculated values for the radial forces Fn1; Fn2; Fn3; Fn4 and/or the pressures in its memory device. The control unit also controls the valves V15; V25; V35; V45; V55; V65, the proportional valves EP1; EP2; EP3; EP4 and the valves EP5; EP6. The calculation of the new values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 and/or the control of the valves V15; V25; V35; V45; V55; V65, the proportional valves EP1; EP2; EP3; EP4 and/or the valves EP5; EP6 is preferably implemented after the control unit has received a specific instruction to do so, which can, for example, be input or selected via the control element.

The calculation of the new values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 for the contact pressures takes into account the fact that these values and the radial forces Fn1; Fn2; Fn3; Fn4 in their original and their new levels are each to be viewed as a vector quantity. Accordingly, the control unit uses

suitable methods for calculating vector quantities. For instance, in addition to appropriate algebraic calculating methods, for example trigonometric calculating methods can also be used to calculate individual components of the respective vectors. In the calculation process, the control unit includes, to the degree necessary, its previously input, essentially unchangeable values, for example the respective mass of the adjustable rollers 04; 06; 07; 08; 09; 11 and the distance from the center of each roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure to the center of its respective adjacent rotational body 12; 13; 14; 16; 17. The result of the calculation can be displayed by the display device of the control unit, for example in the same manner as the original values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62.

In order to set the new value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 for the contact pressure that is exerted in a selected roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, the control unit first uses at least one of the valves V15; V25; V35; V45; V55; V65 to actuate the fixation device of the specific roller lock 21 in which the radial force Fn1; Fn2; Fn3; Fn4 of at least one actuator 22 is to be adjusted to the calculated new value, so that the adjustable roller 04; 06; 07; 08; 09; 11 that is seated in this roller lock 21 can be radially displaced. The control unit then actuates at least one of the proportional valves EP1; EP2; EP3; EP4 and/or at least one of the valves EP5; EP6 in order to adjust the radial force Fn1; Fn2; Fn3; Fn4 of at least one actuator 22 in the respective roller lock 21 to the calculated new value. Afterward the control unit again actuates the at least one valve V15; V25; V35; V45; V55; V65 that was actuated previously, in order to shift the fixation device of that roller lock 21 in which the radial force Fn1; Fn2; Fn3; Fn4 of at least one actuator 22 has been adjusted to the calculated new value to the operational position in which the roller 04; 06; 07; 08; 09; 11 that is adjustable in terms of its contact pressure and is seated in this roller lock 21 can no longer be radially displaced. The new value FN11; FN12; FN21;

FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 for the contact pressure exerted in a selected roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 also results in a change in the width of this roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62.

The above-described change in a value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 for the contact pressure exerted in a selected roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 can be implemented for multiple rollers 04; 06; 07; 08; 09; 11 that are adjustable in terms of their contact pressure, simultaneously or sequentially. For example, the values FN11; FN12; FN21; FN22; FN31; FN32 of all the contact pressures exerted by forme rollers 04; 06; 07, in other words the dampening forme roller 04 and the ink forme rollers 06; 07, can be changed at the same time. Or the value FN21; FN22; FN31; FN32; FN51; FN52; FN61; FN62 of all the contact pressures exerted by the rollers 06; 07; 09; 11 of the inking unit 02, or the value FN11; FN12; FN41; FN42 of all the contact pressures exerted by the rollers 04; 08 of the dampening unit 03, or the value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of the contact pressures of all the rollers 04; 06; 07; 08; 09; 11 in the printing couple 01 can be changed at the same time. Thus groups of simultaneously adjustable values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 can be formed. With the control unit, the values FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of the contact pressures of all rollers 04; 06; 07; 08; 09; 11 that are to be adjusted in terms of their contact pressure, for example those of an inking unit 02 and/or of a dampening unit 03, can be reset within a time period of less than one minute, preferably within a period of a few seconds.

It can be provided that each value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of the contact pressure exerted by a roller 04; 06; 07; 08; 09; 11 that has been changed once or even multiple times, for example via the control element in the control unit, to the value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 that corresponds to the standard configuration,

especially to the target value for the contact pressure exerted in the corresponding roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, can be reset.

The control unit is designed, for example, as a component of a control center that is part of the printing machine or at least part of the printing couple 01, and thus is allocated to the printing machine or to the printing couple 01. As an alternative or in addition, the control unit can be designed, for example, as a mobile component, for example as a notebook, which is connected to the controllable device that is actuated for the purpose of implementing said change, in other words especially to the respective proportional valves EP1; EP2; EP3; EP4, to the valves EP5; EP6 and to the valves V15; V25; V35; V45; V55; V65, only when a value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of a contact pressure that is exerted in a roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 is to be changed.

To implement a change in the value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of a contact pressure that is exerted in a roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62, proof of authorization may be required, wherein prior to implementation of the change, for example, a recognizable password must be input into the control unit via its control element.

The change in the value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of a contact pressure that is exerted in a roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 can be implemented during the rotation of the respective roller 04; 06; 07; 08; 09; 11. As long as at least one channel, with a preferably slot-shaped, continuous opening that extends in an axial direction along the forme cylinder 12, over at least the width of at least one printing forme, and is designed to hold attachment hooks that are bent at the printing formes,

is formed on the circumferential surface of the forme cylinder 12 in its axial direction, the change in the value FN11; FN21; FN31 of the contact pressure exerted in this roller strip N11; N21; N31 occurs when the opening in the channel and the roller strip N11; N21; N31 have no common overlapping surface, so that during the setting of the new value of the contact pressure exerted in this roller strip N11; N21; N31, the roller 04; 06; 07 will not be pressed into the opening in the channel. Accordingly, the contact pressure exerted in a roller strip N11; N21; N31 is changed by the control unit only at times during which the roller 04; 06; 07 that is to be displaced and/or adjusted in terms of its contact pressure is rolling on the closed, customarily solidly designed portion of the circumferential surface of the forme cylinder 12 and/or on the surface of at least one printing forme that is mounted on the forme cylinder 12. During the rollover of the opening in the channel, the control unit blocks any change in the setting of the contact pressure exerted in the roller strip N11; N21; N31.

To verify this condition a sensor that registers the current angular position of the forme cylinder 12 and/or of the roller 04; 06; 07, such as a torque angle gauge, which transmits a signal corresponding to the current angular position to the control unit, can be attached to the forme cylinder and/or to the roller 04; 06; 07, wherein the control unit evaluates said signal as a release signal indicating the permissibility of a change in the setting of a contact pressure exerted in the roller strip N11; N21; N31. If the above condition cannot be fulfilled, or can be fulfilled only with complications, the forme cylinder 12 and the roller 04; 06; 07 in whose joint roller strip N11; N21; N31 the value FN11; FN21; FN31 of the contact pressure exerted therein is to be changed are placed in rotation, specifically at a speed at which a rollover of the opening in the channel by the roller 04; 06; 07 during the setting of the new value for its contact pressure exerted in this roller strip N11; N21; N31 will not produce a negative effect, because the duration of the rollover is very short, and thus will outweigh the effect of the inertia of the masses involved. Furthermore, the implementation of the change in the value FN11; FN12; FN21; FN22; FN31;

FN32; FN41; FN42; FN51; FN52; FN61; FN62 of a contact pressure exerted in a roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 during the rotation of the respective roller 04; 06; 07; 08; 09; 11 also has the advantage of preventing slip-stick effects. The change in the value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of a contact pressure exerted in a roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 is thus implemented during the rotation of the relevant roller 04; 06; 07; 08; 09; 11 and its respective adjacent rotational body 12; 13; 14; 16; 17 at a speed, for example, of at least 3,000 revolutions per hour, preferably at least 5,000 revolutions per hour or more. The implementation of the change in the value FN11; FN12; FN21; FN22; FN31; FN32; FN41; FN42; FN51; FN52; FN61; FN62 of a contact pressure exerted in a roller strip N11; N12; N21; N22; N31; N32; N41; N42; N51; N52; N61; N62 can thus also take place when the printing couple 01 is running in production.

List of Reference Symbols

01	Printing couple
02	Inking unit
03	Dampening unit
04	Roller, dampening forme roller
05	-
06	Roller, ink forme roller
07	Roller, ink forme roller
08	Roller, intermediate roller
09	Roller, intermediate roller
10	-
11	Roller; intermediate roller
12	Rotational body, cylinder, forme cylinder
13	Rotational body, dampening distribution roller
14	Rotational body, dampening unit roller
15	-
16	Rotational body, ink transfer roller
17	Rotational body, inking unit roller
18	End (04; 06; 07; 08; 09; 11)
19	Axis (04; 06; 07; 08; 09; 11)
20	-
21	Support bearing, roller lock
22	Actuator
23	Frame holder
24	Roller holder
25	-
26	Multi-plate assembly
27	Multi-plate assembly

28	Channel
29	Pressure chamber
30	-
31	Pressure plate
32	Spring element
33	Plunger
34	Plunger head
35	-
36	Side frame
37	Sealing element
38	Surface (22), membrane
39	Roller mount
40	-
41	Pressure medium conduit
42	Pressure level

α Opening angle

EP1	Proportional valve 3/3-way proportional valve
EP2	Proportional valve, 3/3-way proportional valve
EP3	Proportional valve, 3/3-way proportional valve
EP4	Proportional valve, 3/3-way proportional valve
EP5	Valve, 5/2-way valve
EP6	Valve, 5/2-way valve

V15	Valve, 3/2-way valve
V25	Valve, 3/2-way valve
V35	Valve, 3/2-way valve
V45	Valve, 3/2-way valve

V55	Valve, 3/2-way valve
V65	Valve, 3/2-way valve
Fn1	Force, radial
Fn2	Force, radial
Fn3	Force, radial
Fn4	Force, radial
N11	Roller strip, nip-point
N12	Roller strip, nip-point
N21	Roller strip, nip-point
N22	Roller strip, nip-point
N31	Roller strip, nip-point
N32	Roller strip, nip-point
N41	Roller strip, nip-point
N42	Roller strip, nip-point
N51	Roller strip, nip-point
N52	Roller strip, nip-point
N61	Roller strip, nip-point
N62	Roller strip, nip-point